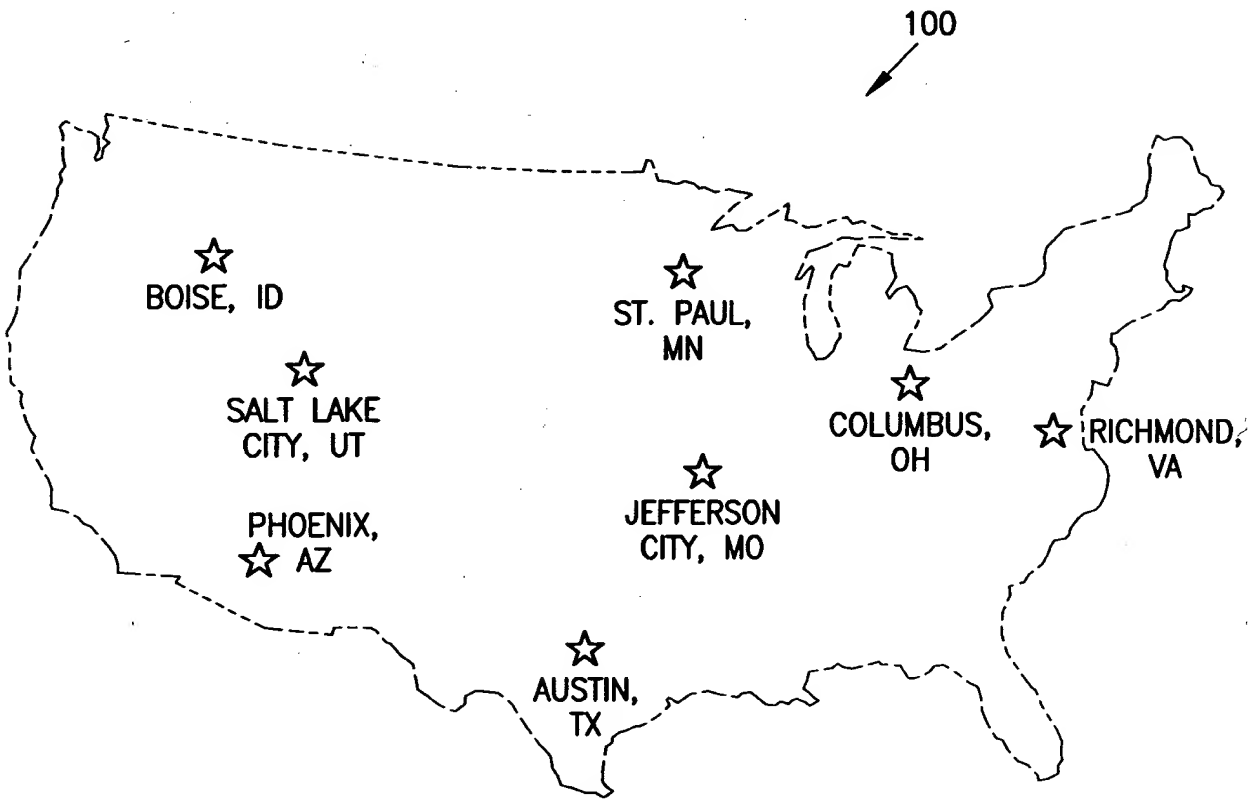

FIG. 1

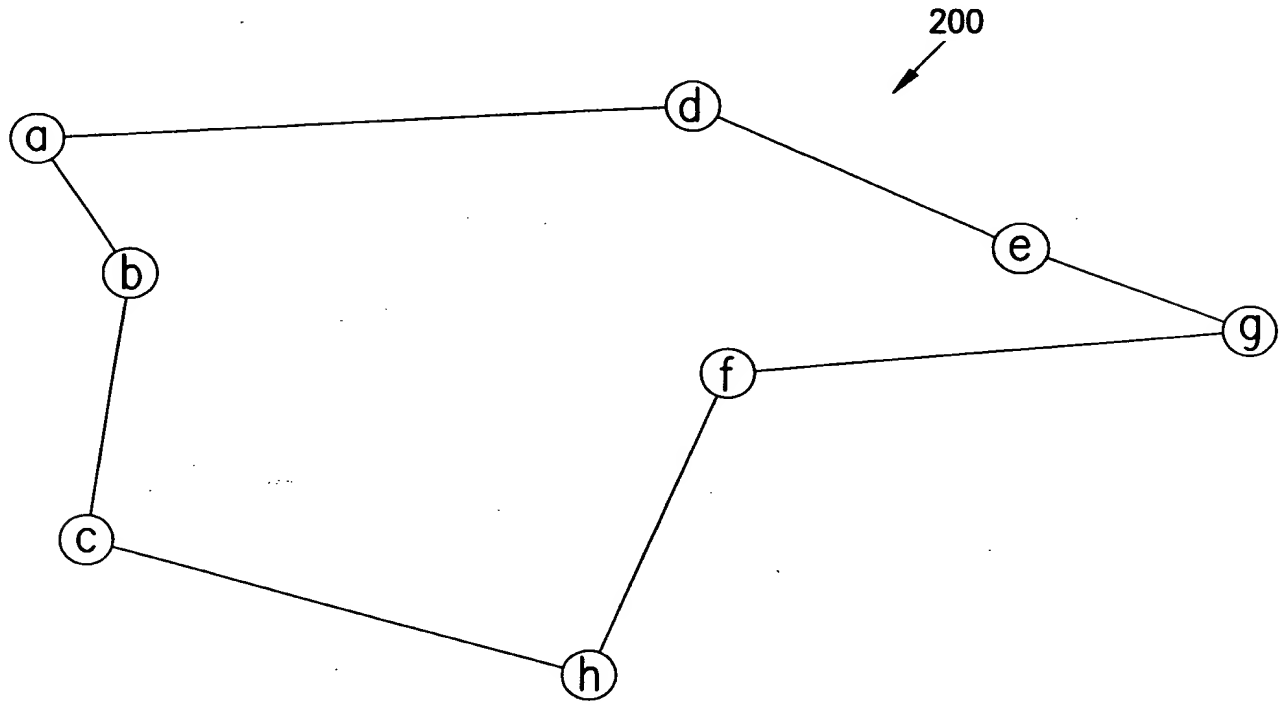

FIG. 2

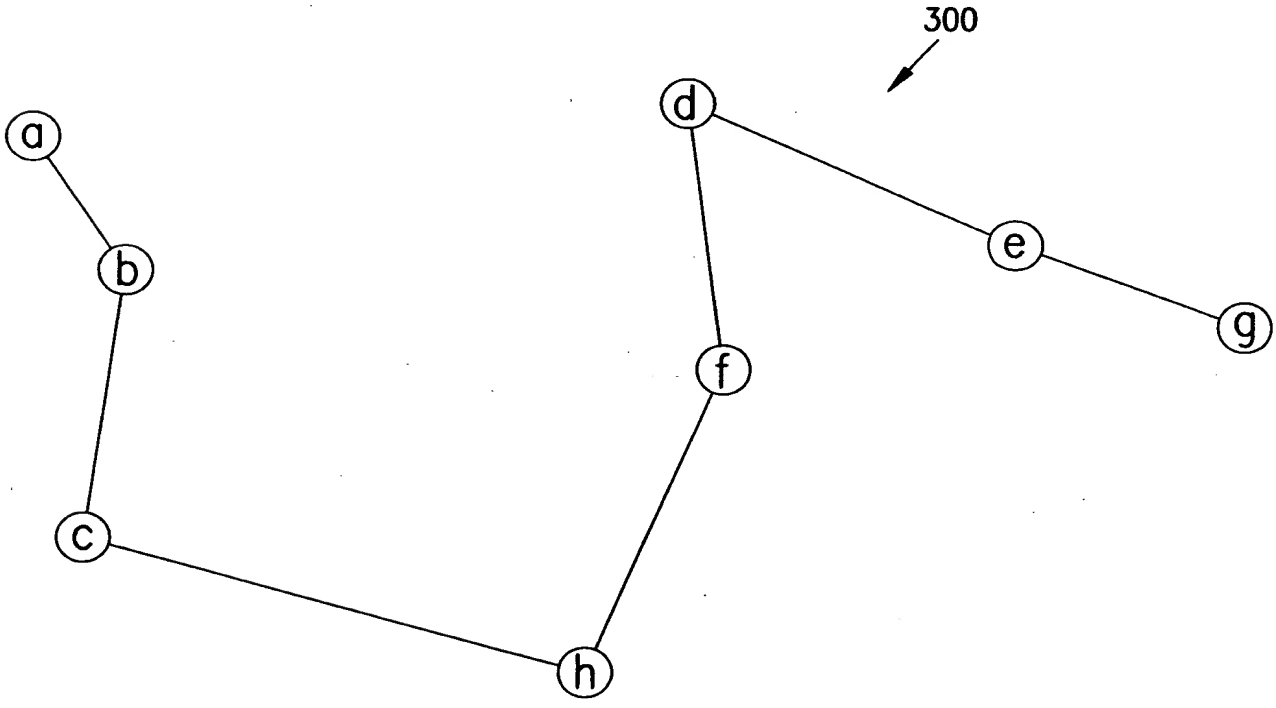

FIG. 3

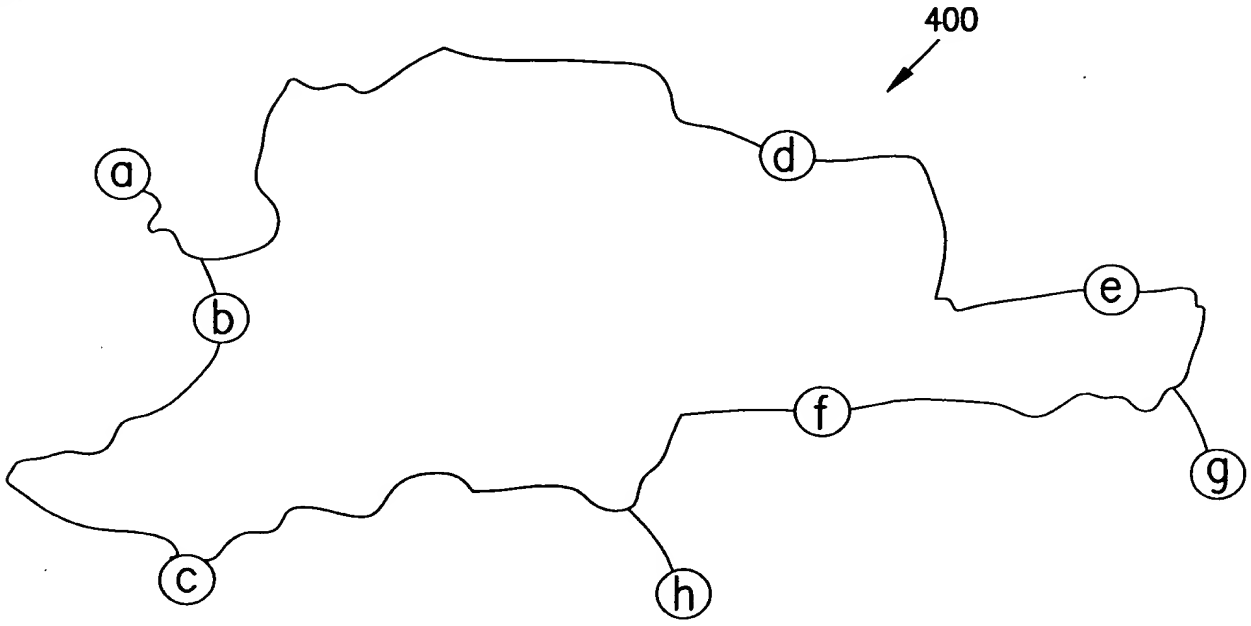

FIG. 4

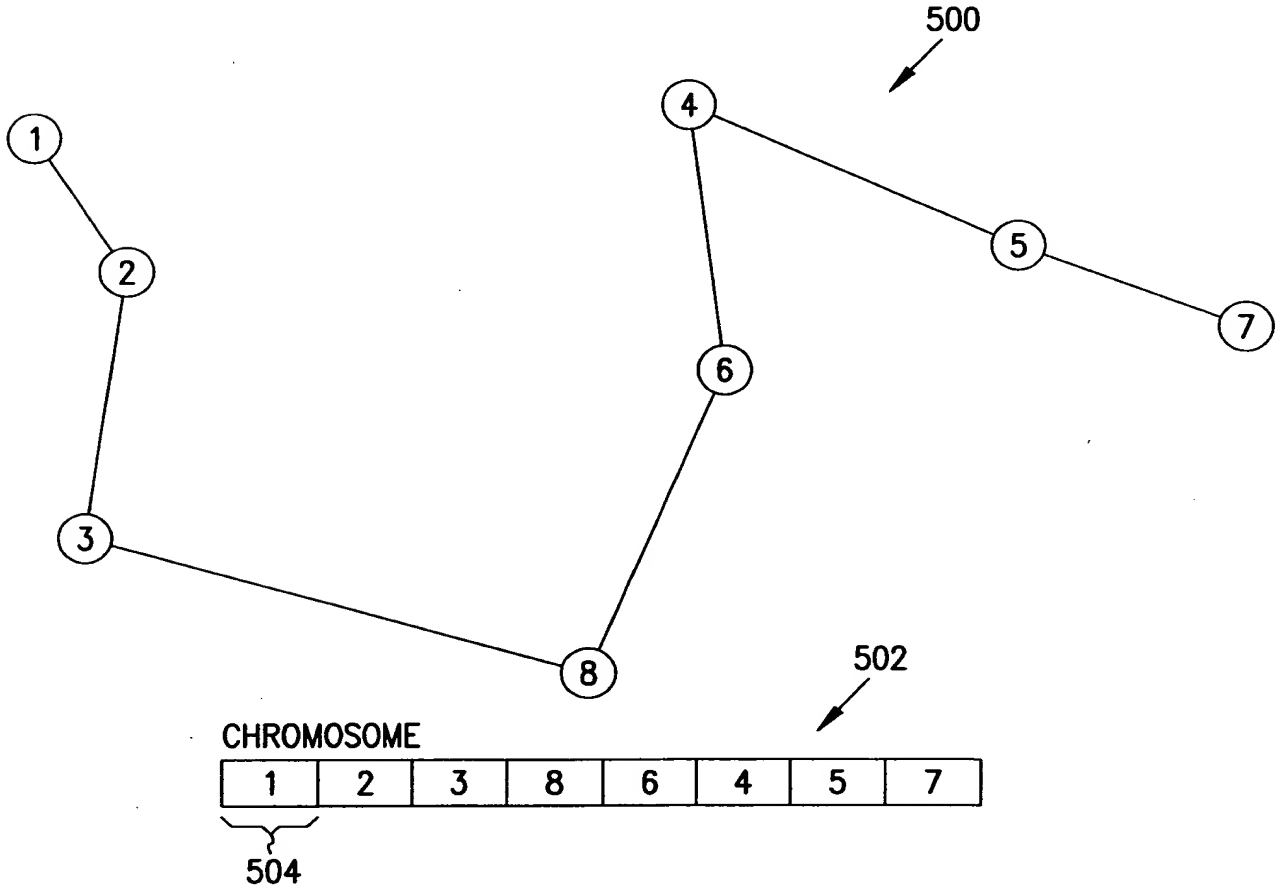

FIG. 5

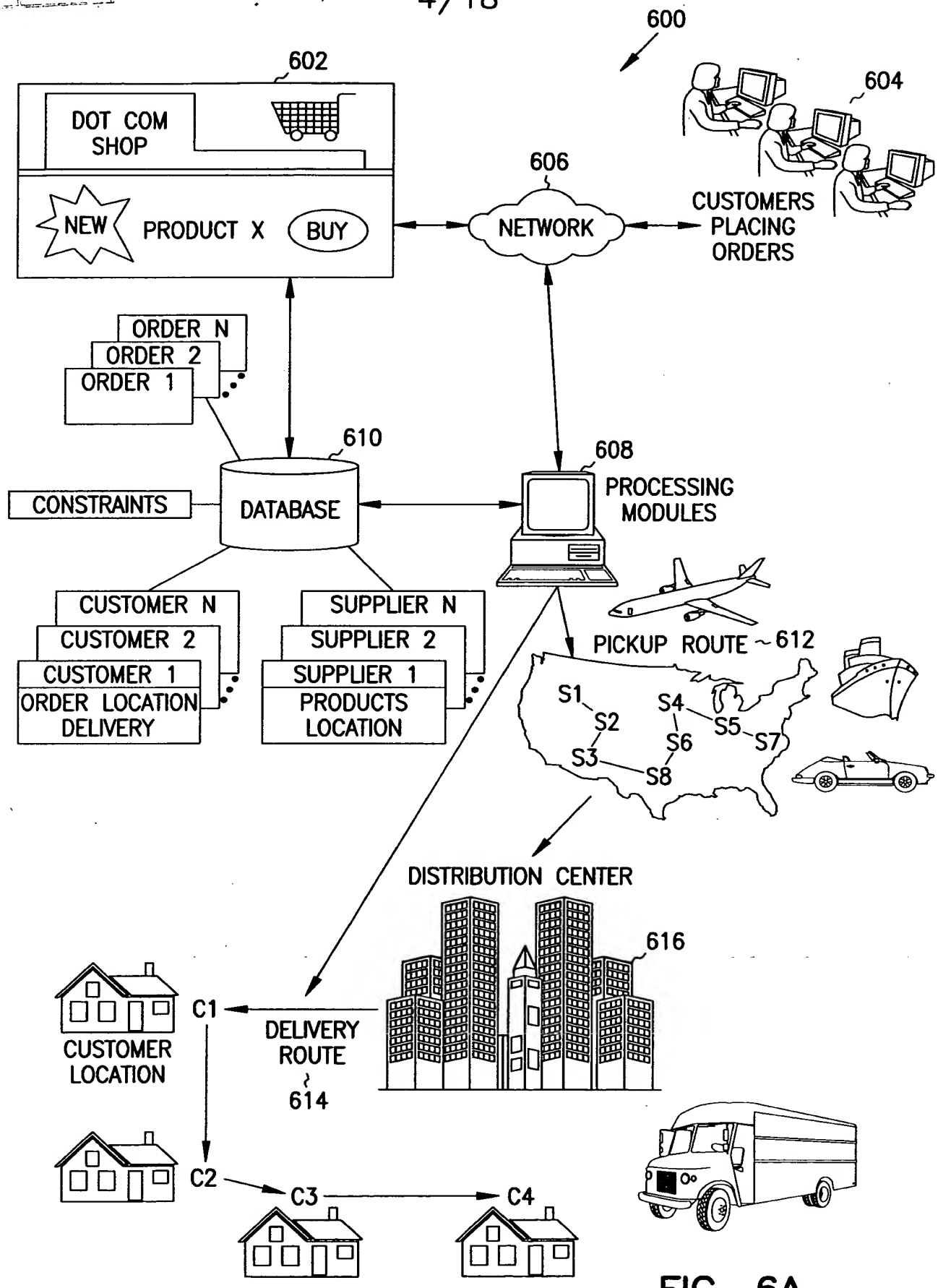

FIG. 6A

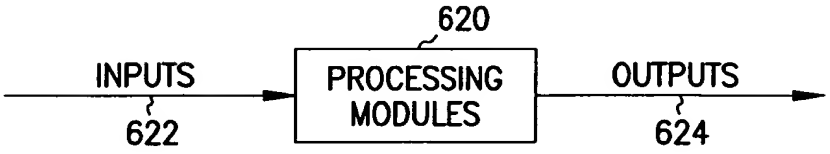
620
INPUTS
622
PROCESSING MODULES
OUTPUTS
624

FIG. 6B

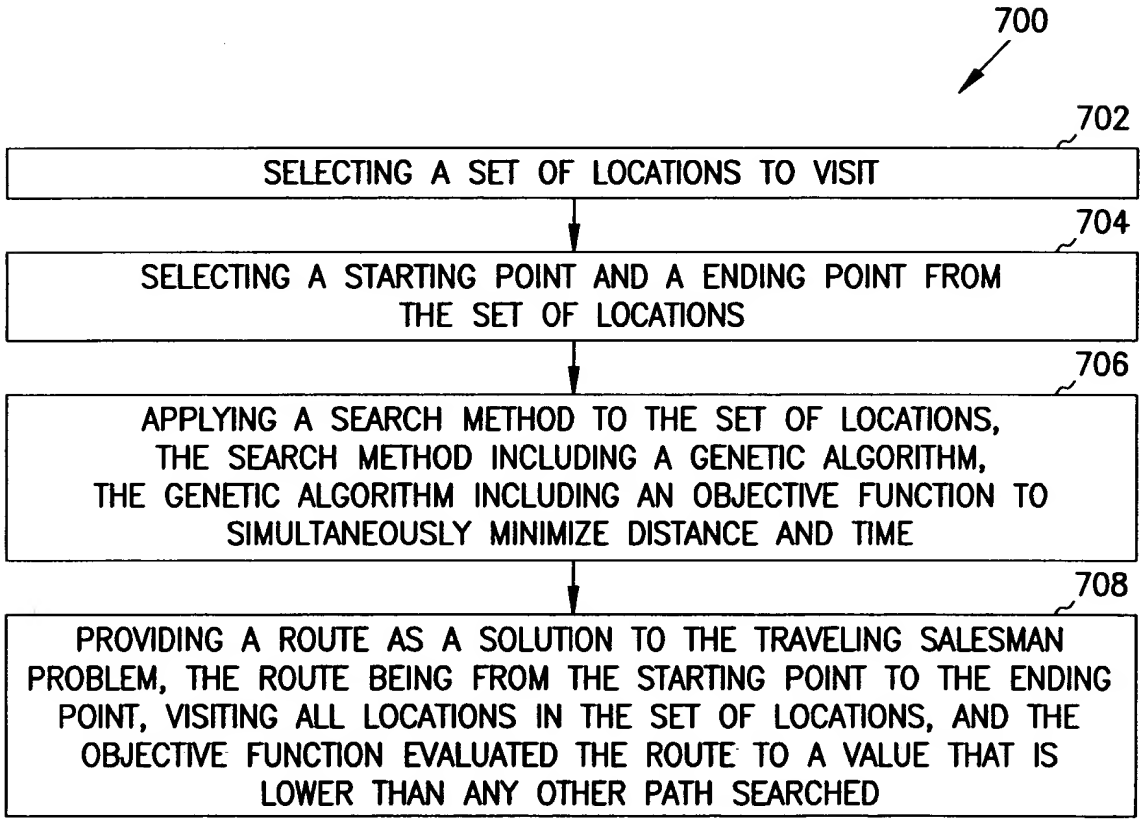
700
702
SELECTING A SET OF LOCATIONS TO VISIT
704
SELECTING A STARTING POINT AND A ENDING POINT FROM THE SET OF LOCATIONS
706
APPLYING A SEARCH METHOD TO THE SET OF LOCATIONS, THE SEARCH METHOD INCLUDING A GENETIC ALGORITHM, THE GENETIC ALGORITHM INCLUDING AN OBJECTIVE FUNCTION TO SIMULTANEOUSLY MINIMIZE DISTANCE AND TIME
708
PROVIDING A ROUTE AS A SOLUTION TO THE TRAVELING SALESMAN PROBLEM, THE ROUTE BEING FROM THE STARTING POINT TO THE ENDING POINT, VISITING ALL LOCATIONS IN THE SET OF LOCATIONS, AND THE OBJECTIVE FUNCTION EVALUATED THE ROUTE TO A VALUE THAT IS LOWER THAN ANY OTHER PATH SEARCHED

FIG. 7

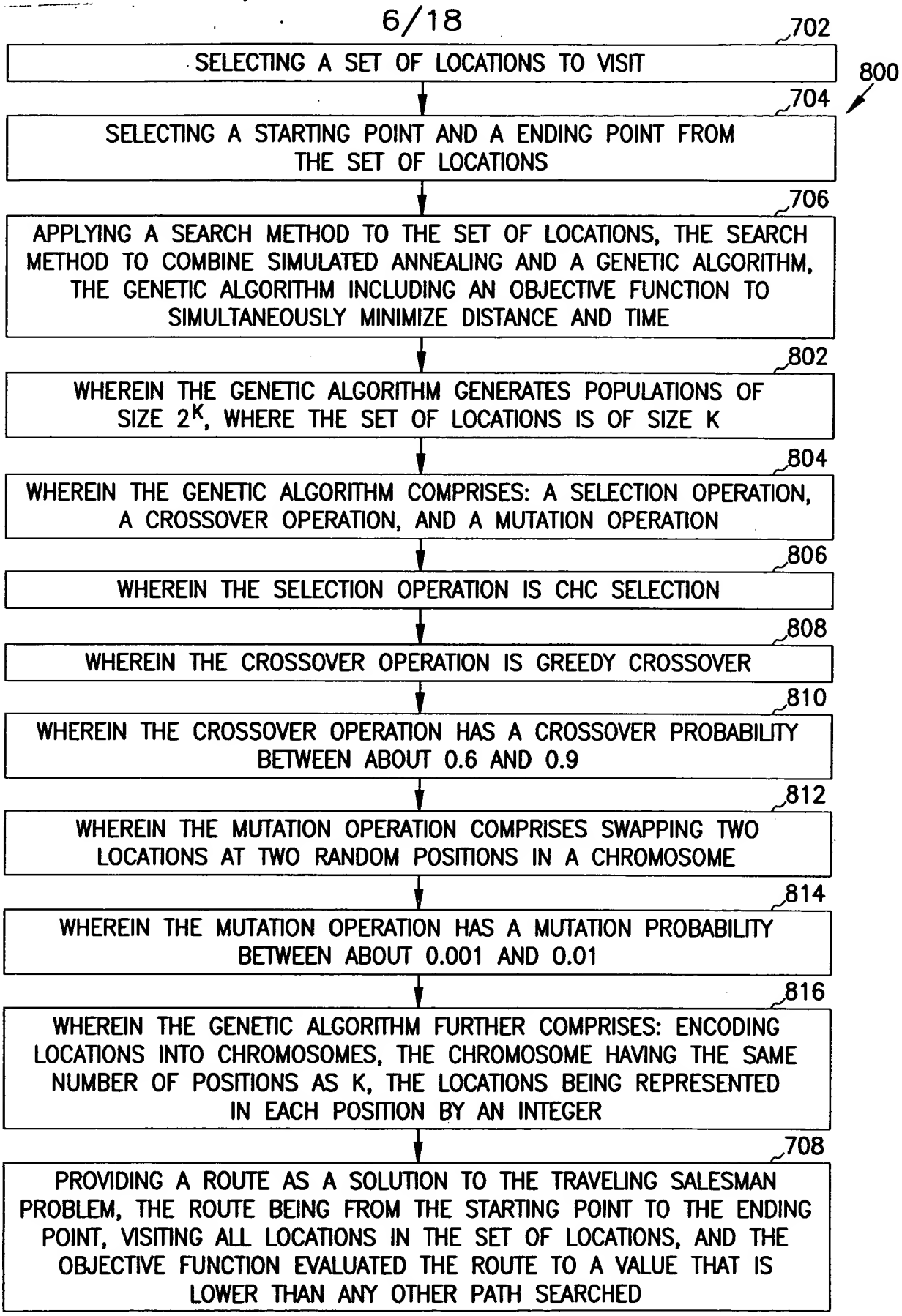

FIG. 8

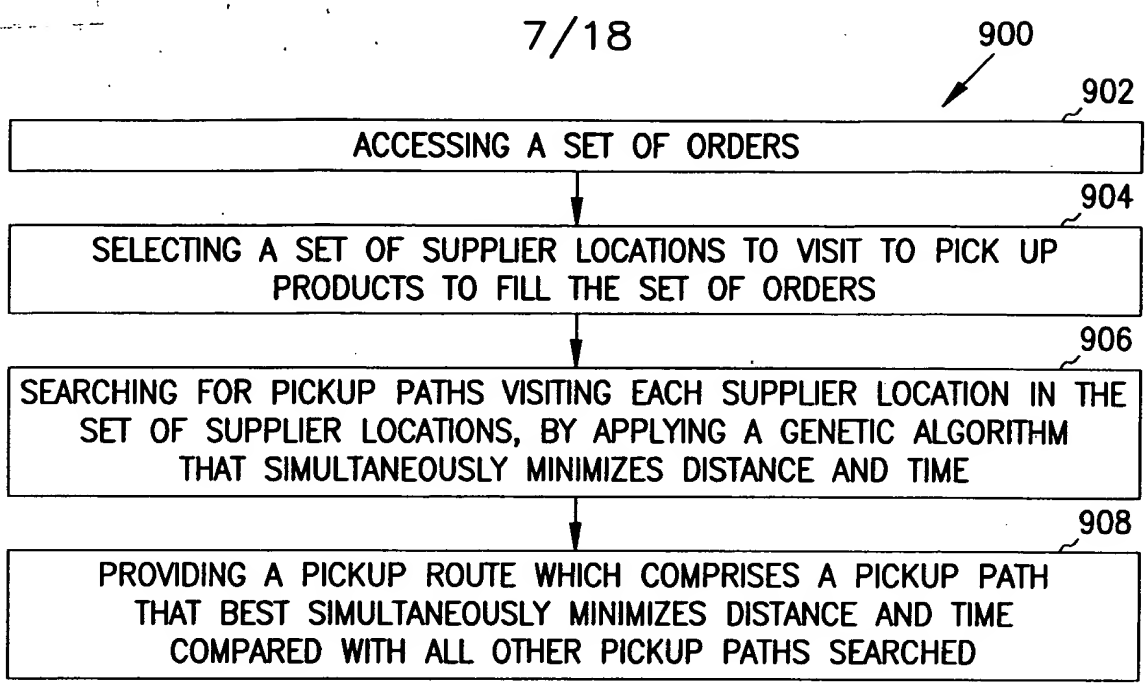

FIG. 9

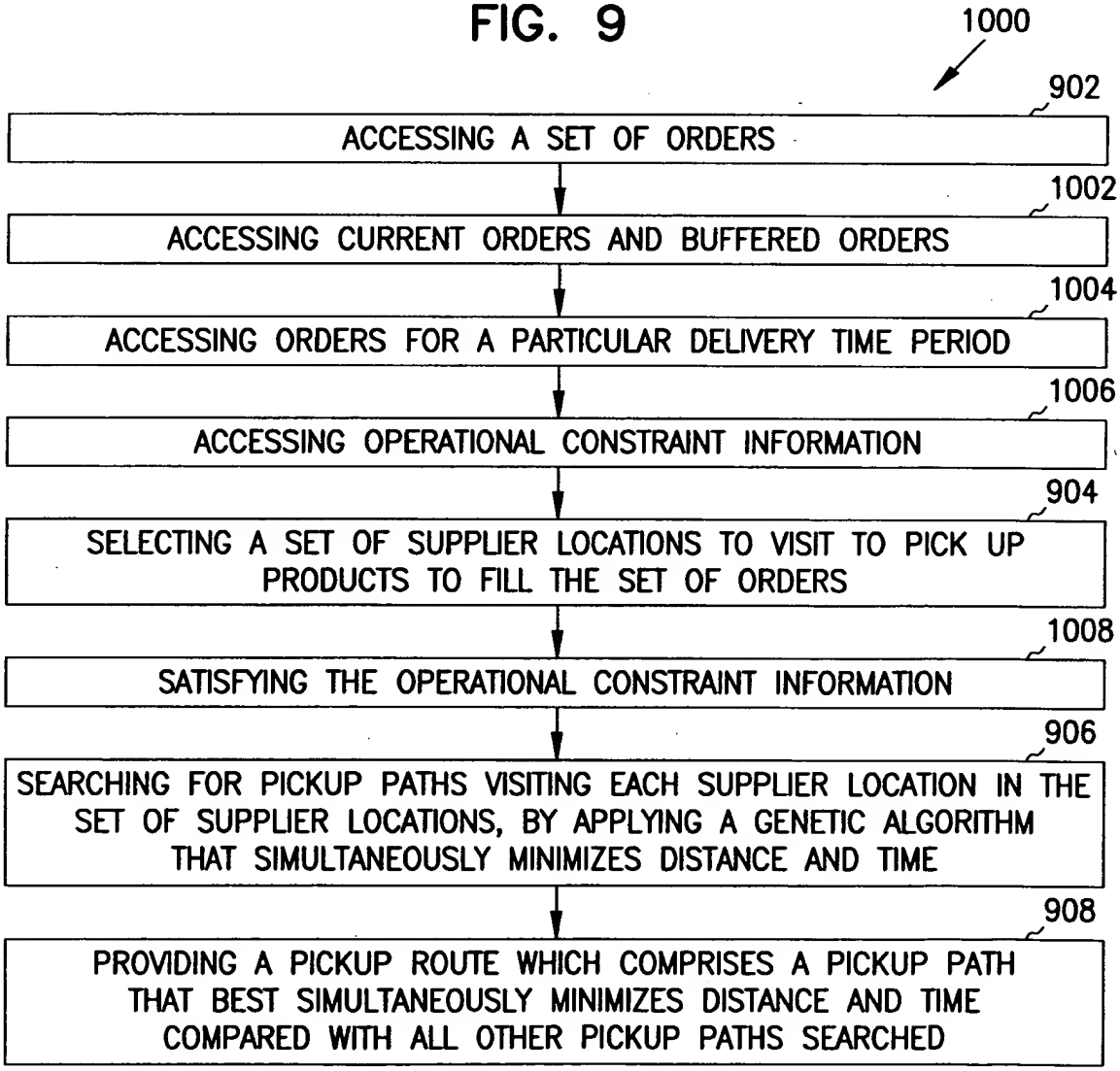

FIG. 10

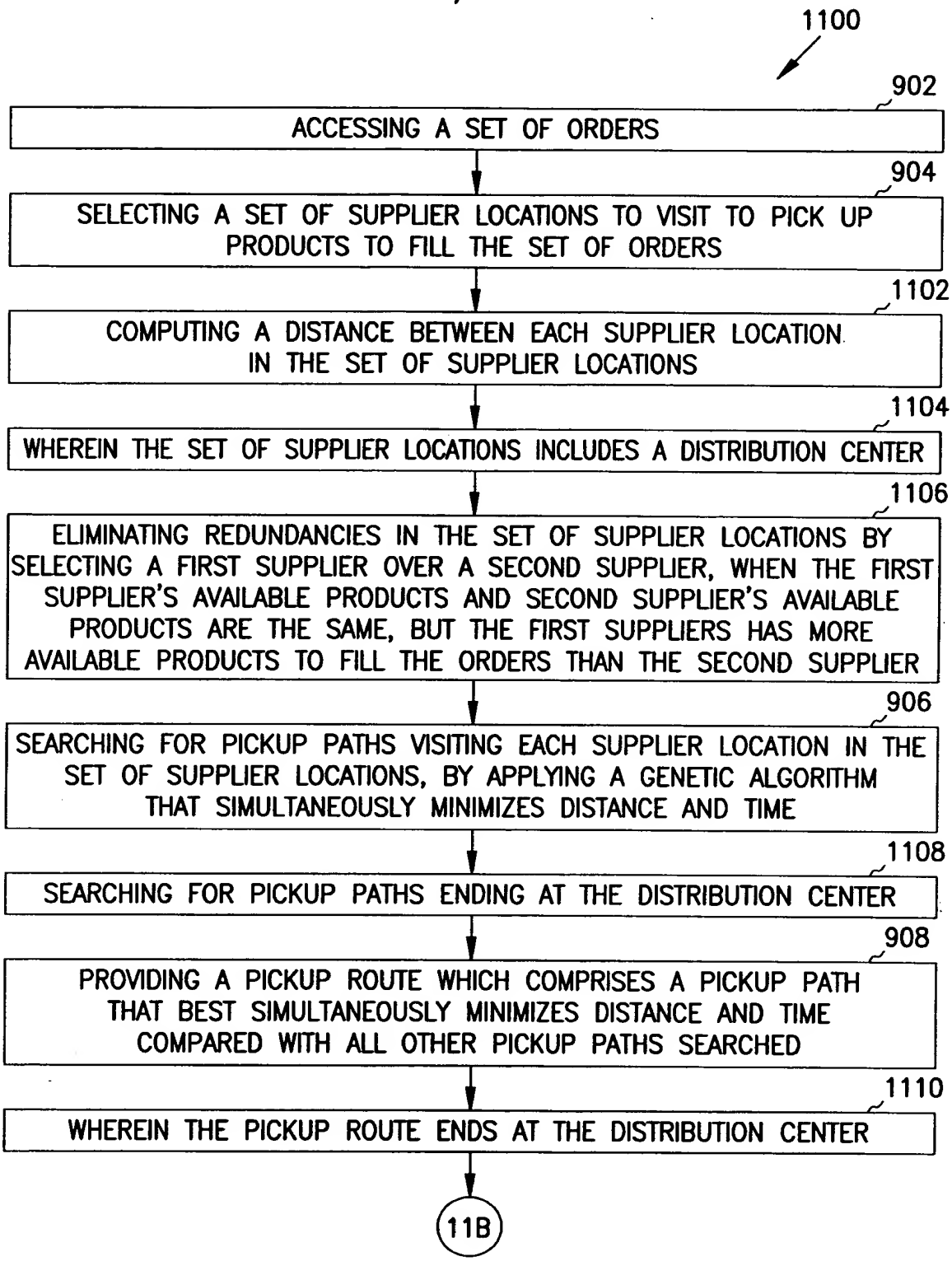
1100
902
ACCESSING A SET OF ORDERS
904
SELECTING A SET OF SUPPLIER LOCATIONS TO VISIT TO PICK UP PRODUCTS TO FILL THE SET OF ORDERS
1102
COMPUTING A DISTANCE BETWEEN EACH SUPPLIER LOCATION IN THE SET OF SUPPLIER LOCATIONS
1104
WHEREIN THE SET OF SUPPLIER LOCATIONS INCLUDES A DISTRIBUTION CENTER
1106
ELIMINATING REDUNDANCIES IN THE SET OF SUPPLIER LOCATIONS BY SELECTING A FIRST SUPPLIER OVER A SECOND SUPPLIER, WHEN THE FIRST SUPPLIER'S AVAILABLE PRODUCTS AND SECOND SUPPLIER'S AVAILABLE PRODUCTS ARE THE SAME, BUT THE FIRST SUPPLIERS HAS MORE AVAILABLE PRODUCTS TO FILL THE ORDERS THAN THE SECOND SUPPLIER
906
SEARCHING FOR PICKUP PATHS VISITING EACH SUPPLIER LOCATION IN THE SET OF SUPPLIER LOCATIONS, BY APPLYING A GENETIC ALGORITHM THAT SIMULTANEOUSLY MINIMIZES DISTANCE AND TIME
1108
SEARCHING FOR PICKUP PATHS ENDING AT THE DISTRIBUTION CENTER
908
PROVIDING A PICKUP ROUTE WHICH COMPRISES A PICKUP PATH THAT BEST SIMULTANEOUSLY MINIMIZES DISTANCE AND TIME COMPARED WITH ALL OTHER PICKUP PATHS SEARCHED
1110
WHEREIN THE PICKUP ROUTE ENDS AT THE DISTRIBUTION CENTER
11B

FIG. 11A

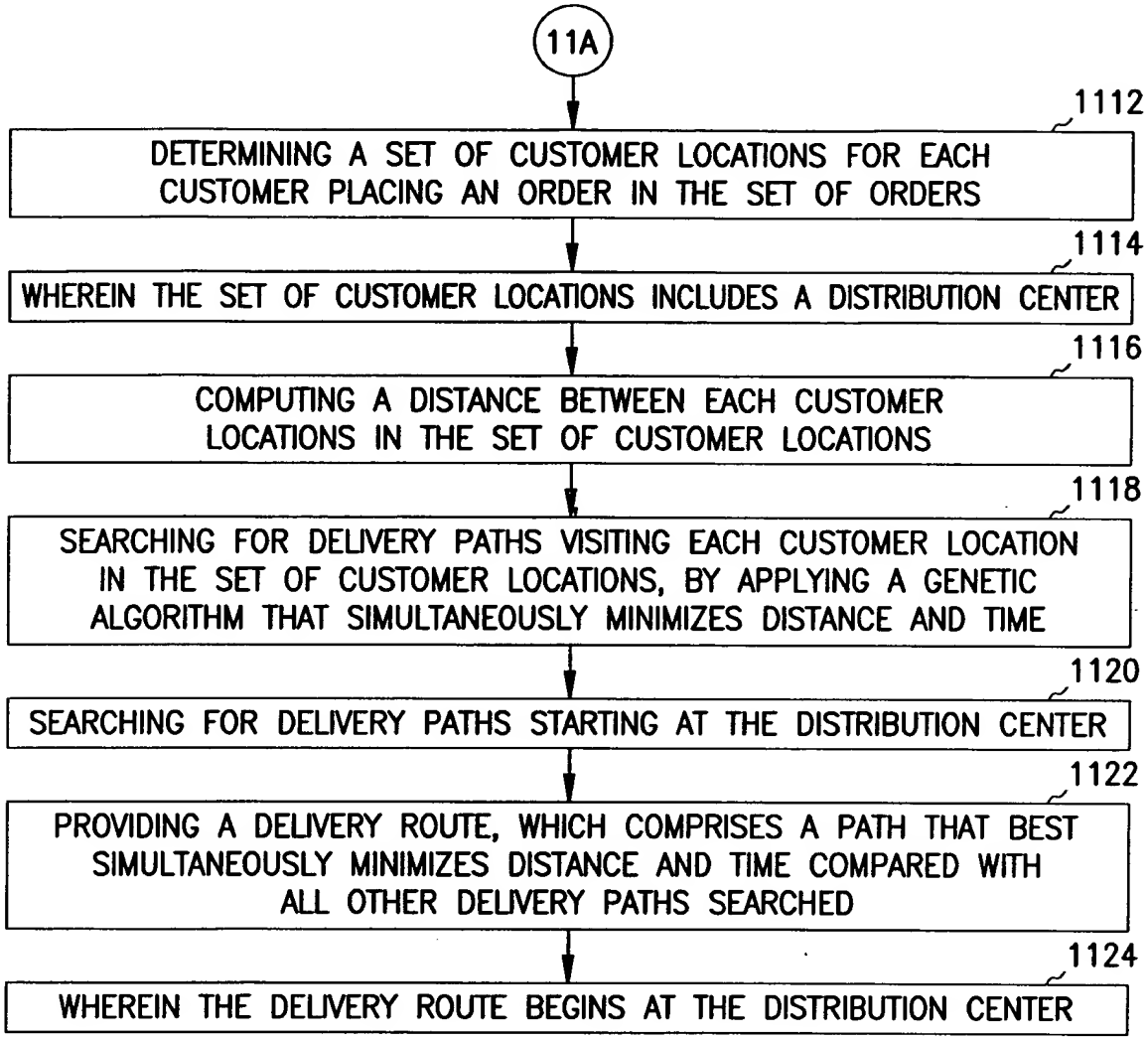

FIG. 11B

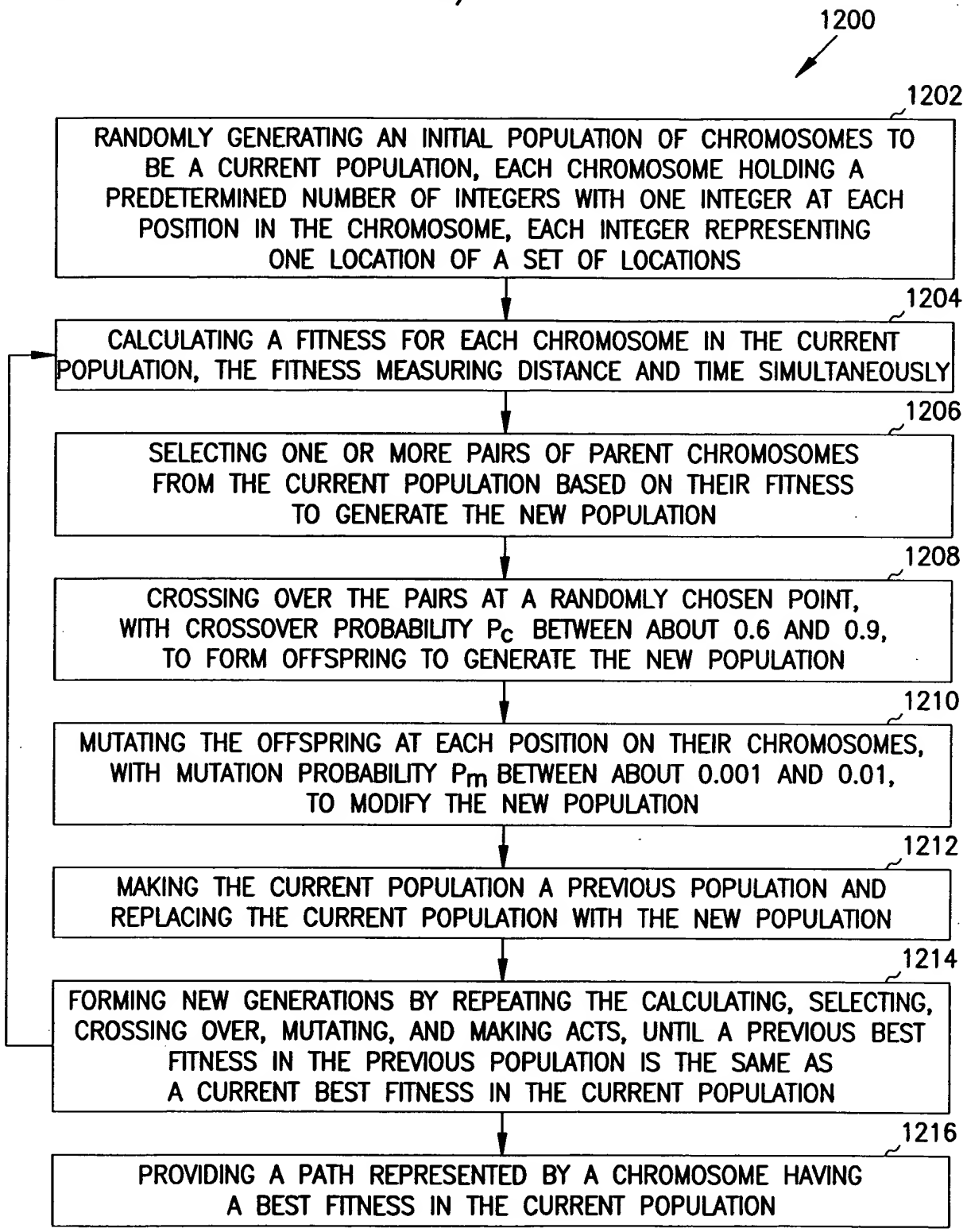

FIG. 12

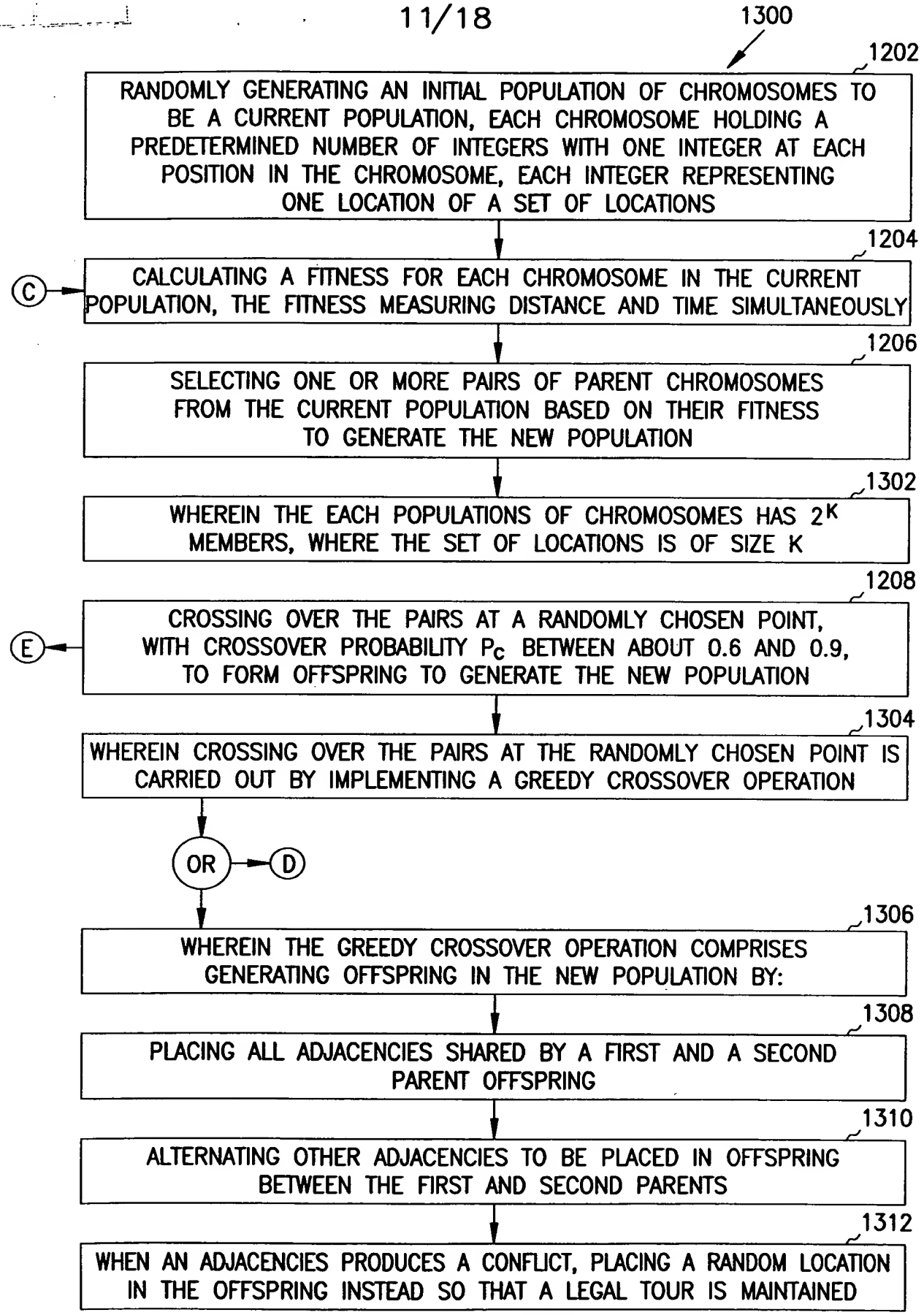

FIG. 13A

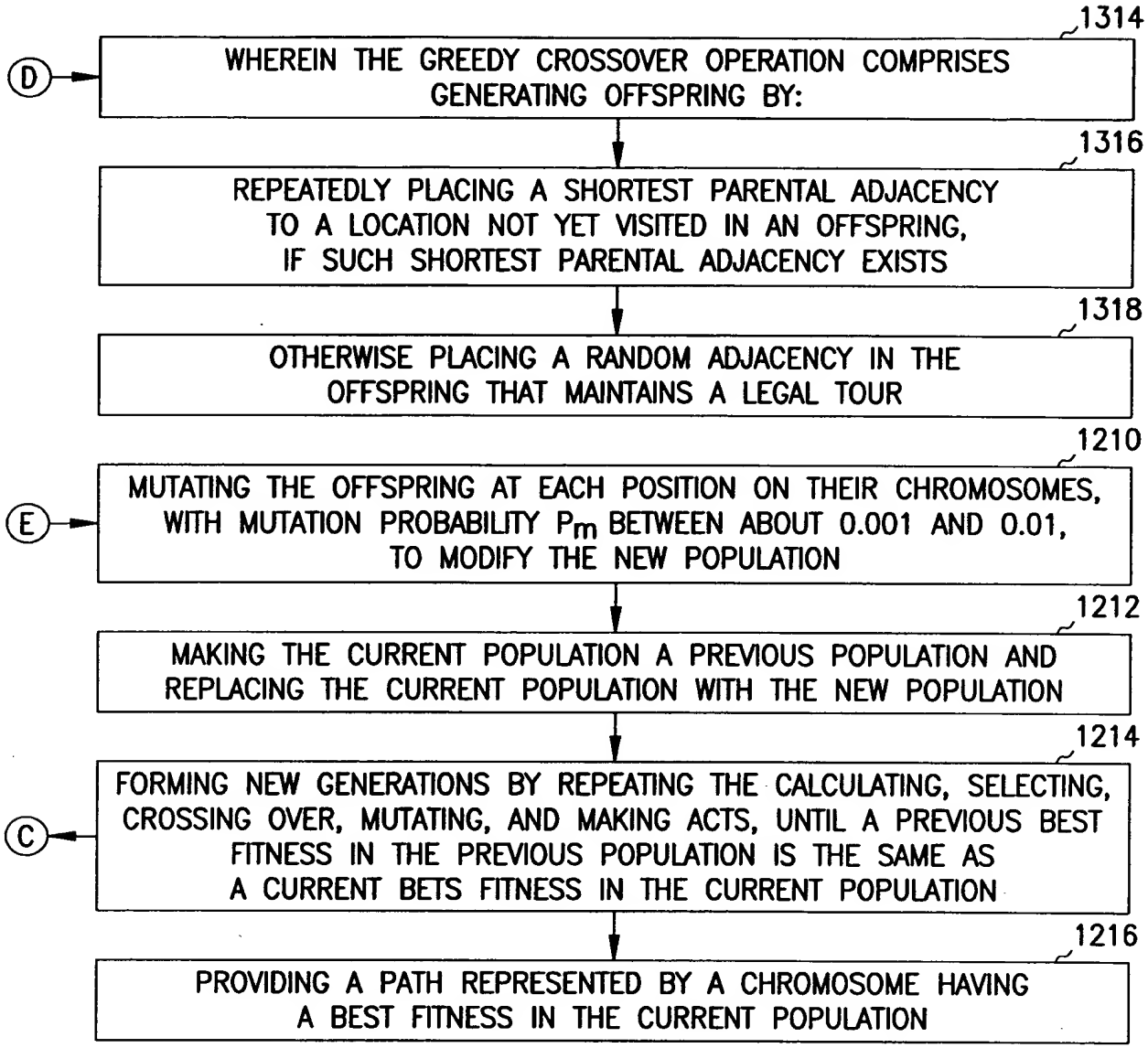

FIG. 13B

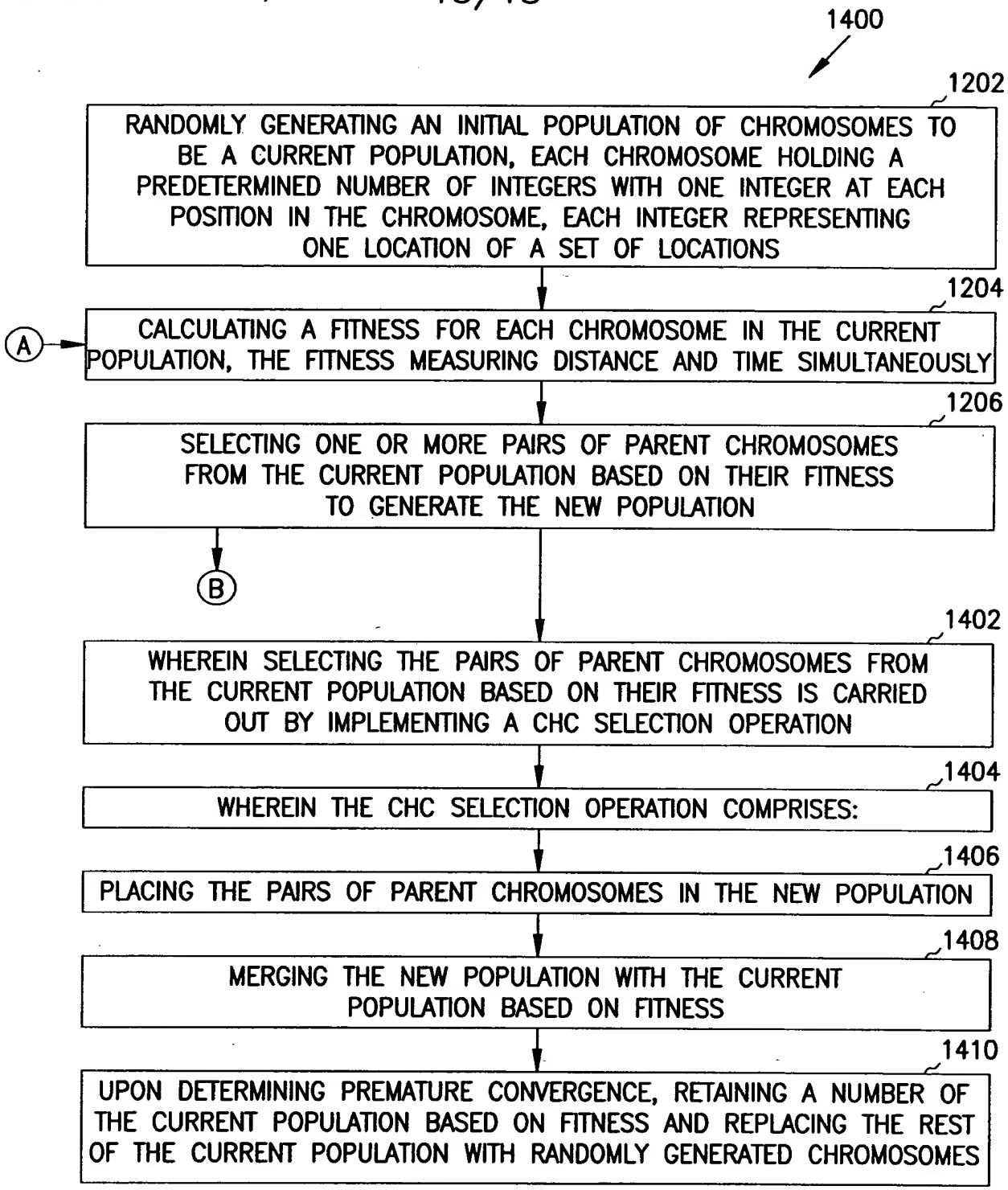

FIG. 14A

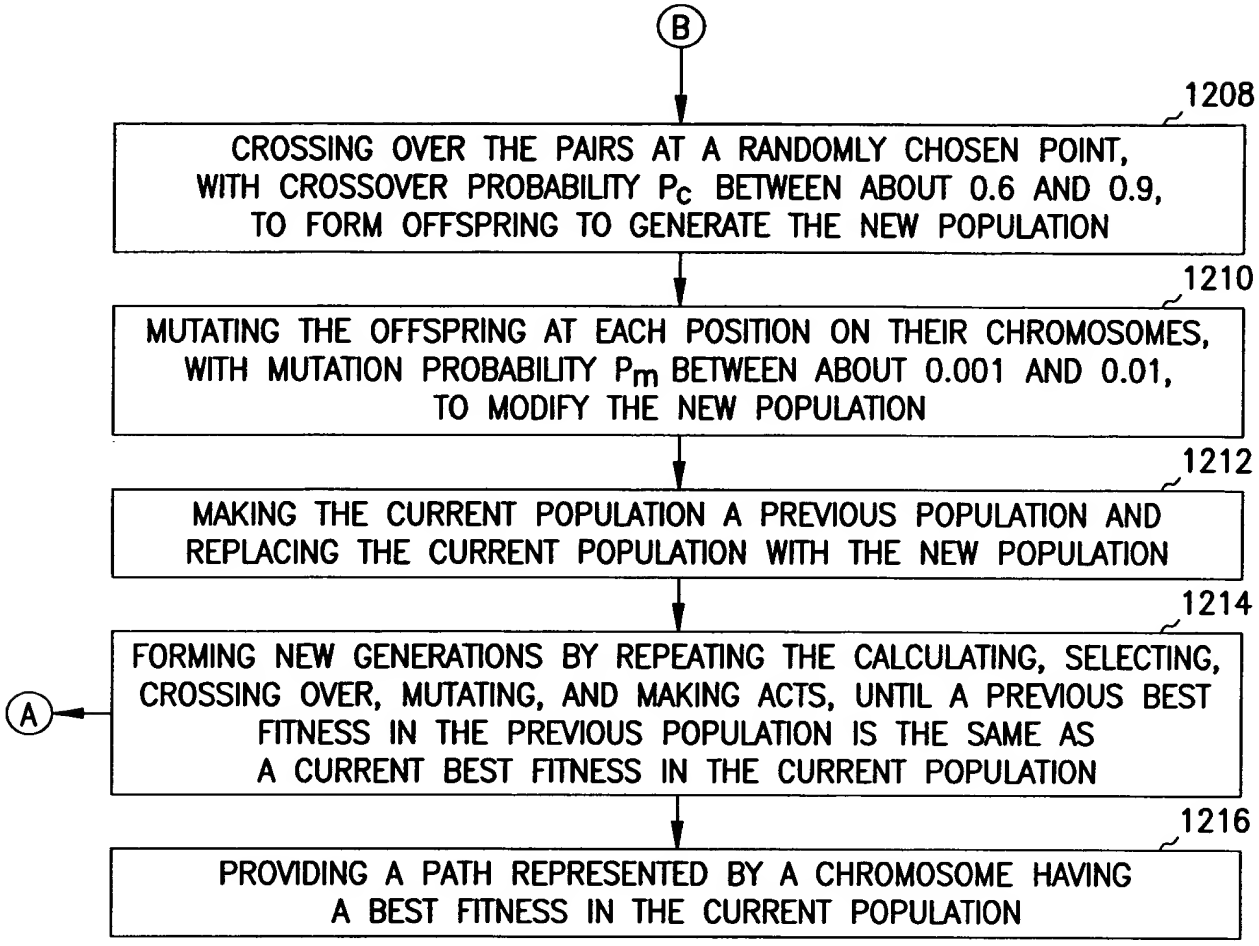

FIG. 14B

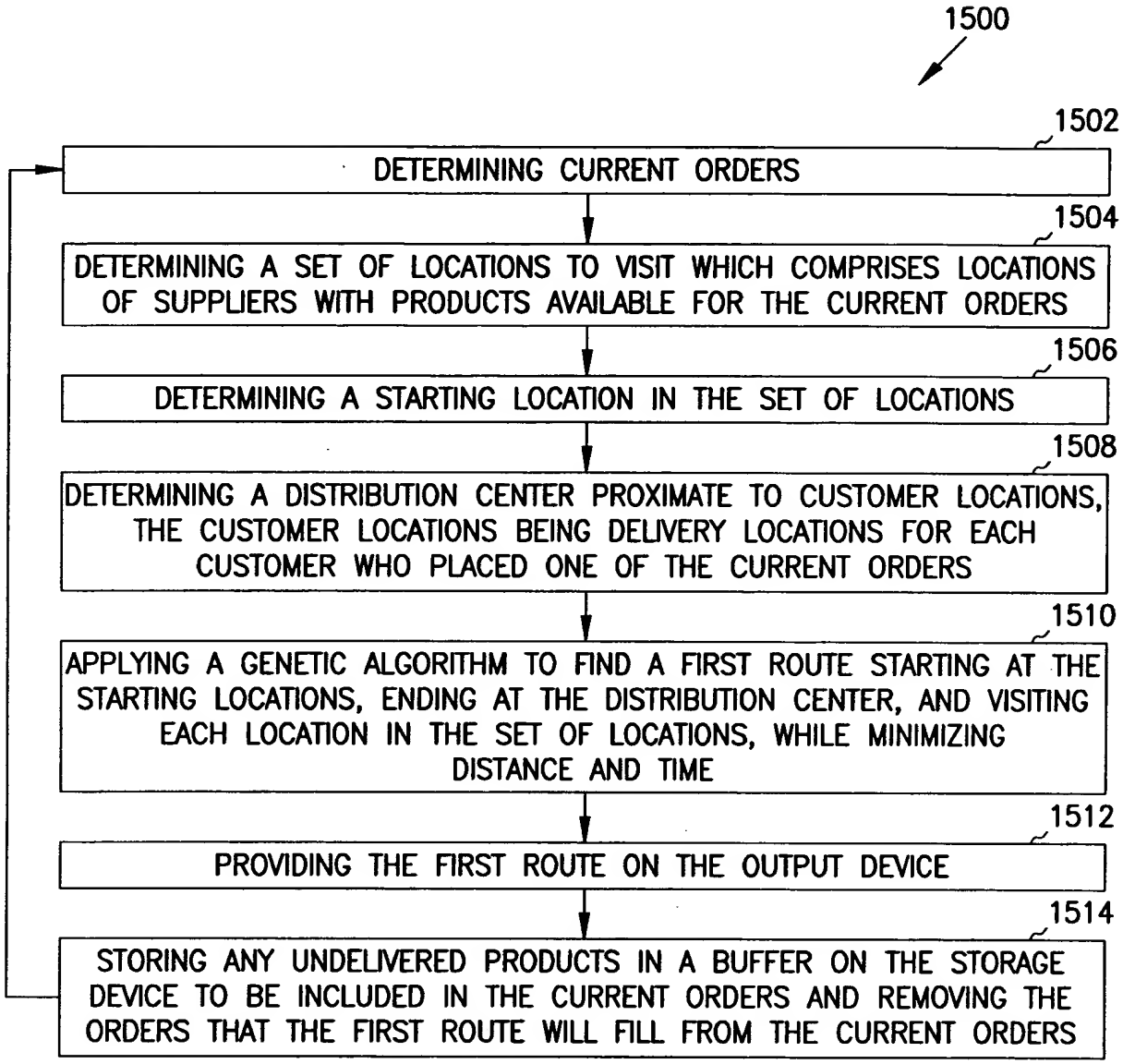

FIG. 15

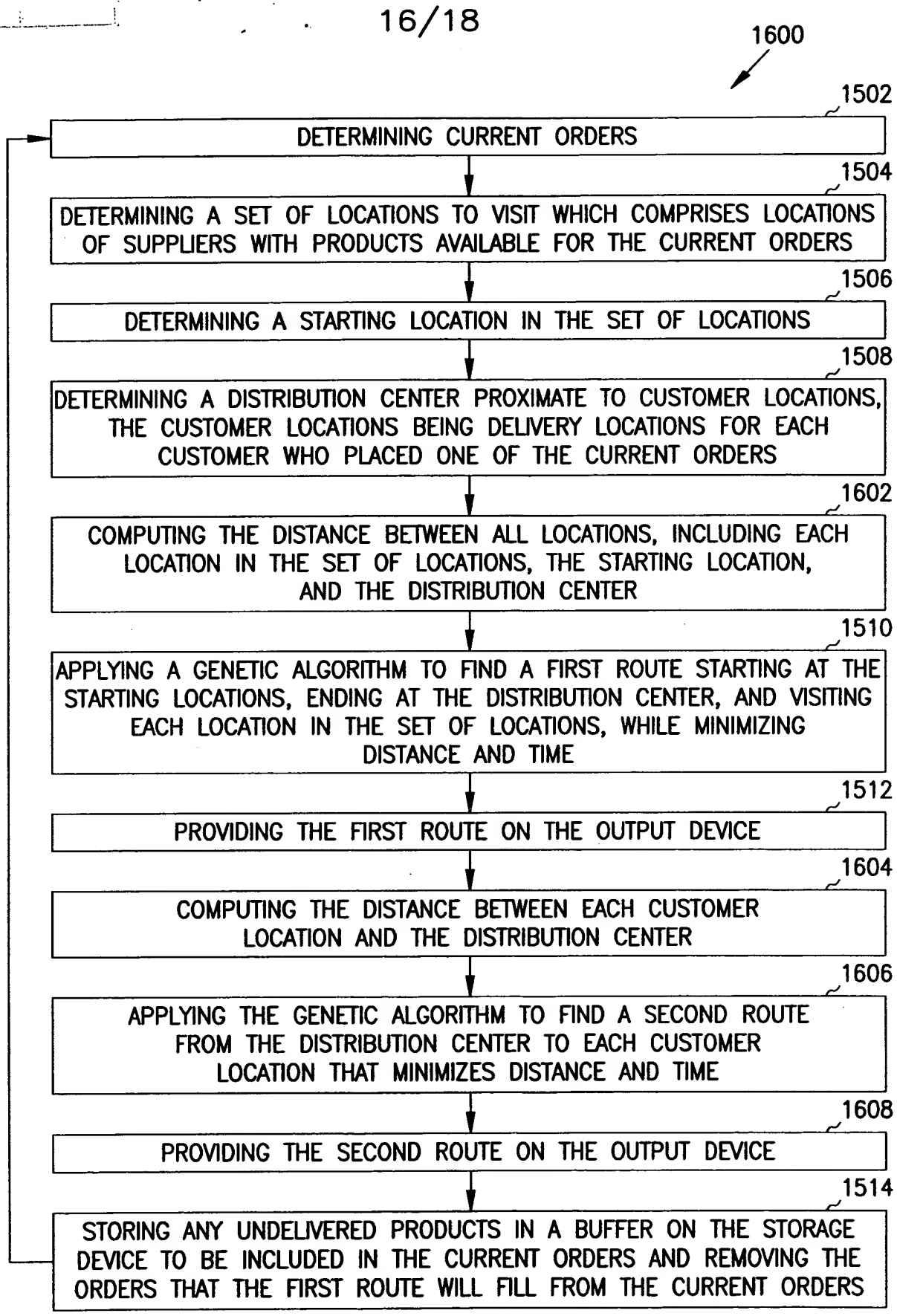

FIG. 16

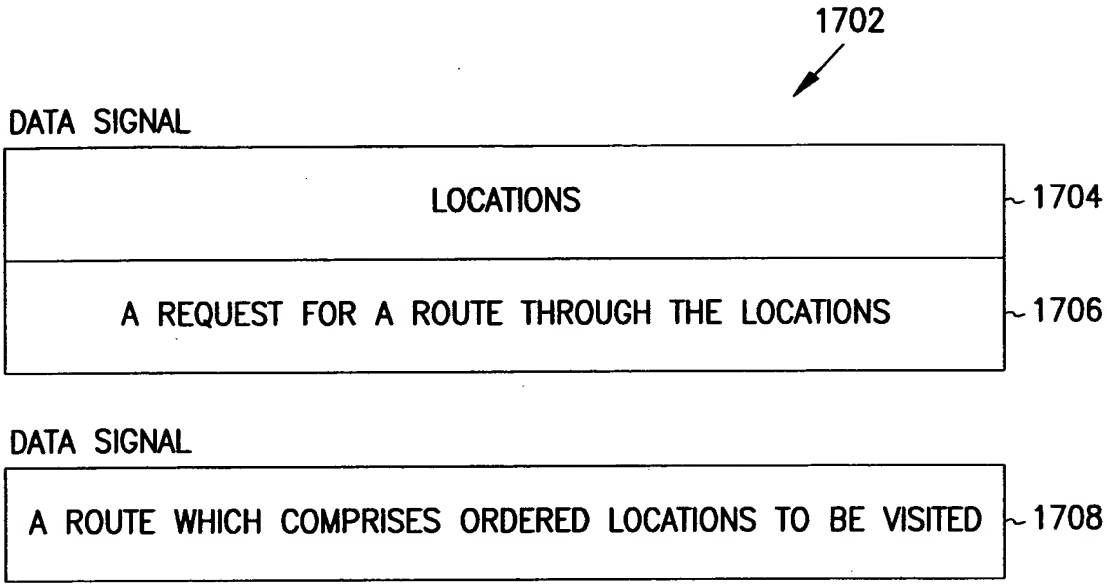

FIG. 17

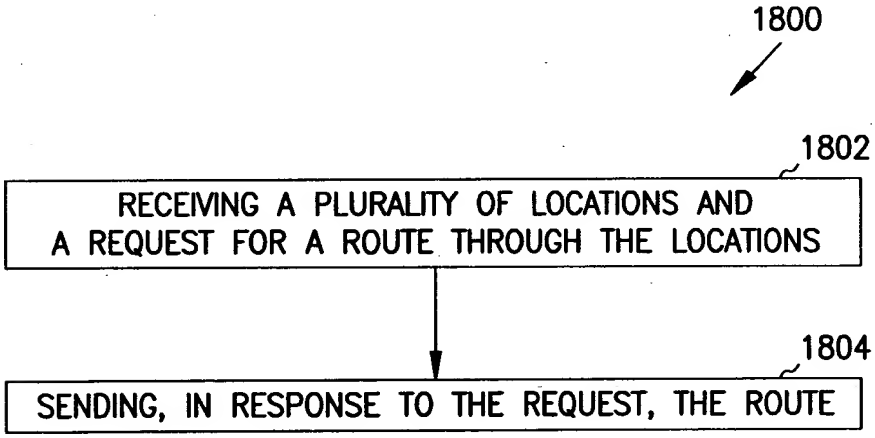

FIG. 18

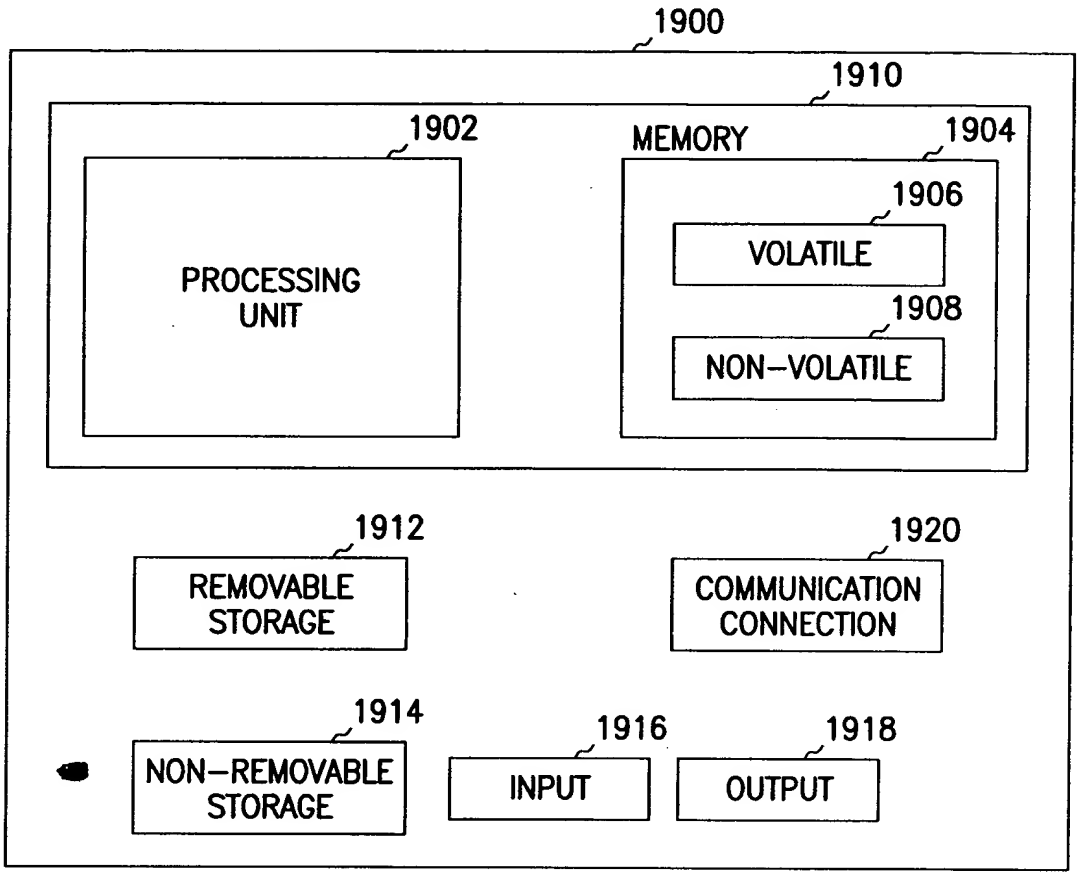

FIG. 19